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BASF Aktiengesellschaft

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Claims

1. Method of uptaking, or storing, or releasing, or uptaking and storing, or uptaking and releasing, or storing and releasing or uptaking, storing and releasing at least one gas characterized in that the gas is uptaken, or stored, or released, or uptaken and stored, or uptaken and released, or stored and released or uptaken, stored and released by an agent comprising a metallo-organic framework material comprising pores and at least one metal ion and at least one at least bidentate organic compound, which is bound, preferably coordinately bound to said metal ion.

2. Method according to claim 1, characterized in that the gas comprises at least one of the gases among the group consisting of:
Hydrogen, nitrogen, noble gases, CO, CO_2, and compounds generating and/or delivering these gases.

3. Method according to claim 2, wherein the gas is hydrogen, a hydrogen containing gas mixture, a hydrogen generating or delivering substance, a gas mixture comprising at least one hydrogen generating and/or delivering substance.

4. Method according to claim 1, characterized in that the metal ion is selected among ions of elements of groups Ia, IIa, IIIa, IVa to VIIIa and Ib to VIb of the periodic table of the elements.

5. Method according to claim 1, characterized in that the metallo-organic framework material is contacted with at least one capacity-enhancing agent selected from the group consisting of:
solvents, complexes, metals, metal hydrides, metal alloys, and mixtures of two or more thereof.

6. Method according to claim 1, characterized in that the bidentate organic compound is selected among substituted or unsubstituted aromatic polycarboxylic acids, which may comprise one or more nuclei; and substituted or unsubstituted aromatic polycarboxylic acids, which comprise at least one hetero-atom and which may have one or more nuclei.

7. Method according to claim 1, characterized in that the metallo organic framework material comprising pores exhibits a specific surface area, as determined via adsorption (BET according to DIN 66131) of larger than 20 m^2/g.

8. Device for uptaking, or storing, or releasing, or uptaking and storing, or uptaking and releasing, or storing and releasing, or uptaking, storing and releasing at least one gas, accomodating a metallo-organic framework material, as defined in claim 1.

9. Device according to claim 8, further including
a container accomodating the metallo-organic framework material;
an entrance/exit opening for allowing the at least one gas to enter or exit the device;
a gas-tight maintaining mechanism capable of maintaining the gas under pressure inside the container.

10. Fuel cell accomodating the agent according to claim 1.

11. Method of using an an agent comprising a metallo-organic framework

material comprising pores and at least one metal ion and at least one at least bidentate organic compound, which is bound, preferably coordinately bound to said metal ion as for uptaking, or storing, or releasing, or uptaking and storing, or uptaking and releasing, or storing and releasing or uptaking, storing and releasing at least one gas in stationary, mobile and mobile portable applications.

12. Method of using according to claim 11, wherein the applications are power plants, cars, trucks, busses, cell phones, laptops.

13. Method of using a device according to claim 8 for supplying power to power plants, cars, trucks, busses, cell phones, laptops.

14. Method of using the fuel cell according to claim 10 for supplying power to power plants, cars, trucks, busses, cell phones, laptops.